No. 200400053

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northwest Plant Breeding Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) MAY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'ClearFirst'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-sixth day of July, in the year two thousand and five.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. ***Include form number and date on all reproductions*** Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
Northwest Plant Breeding Company mail 6/4/08

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
ClearFirst

3. VARIETY NAME
'Clear First'

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
2001 Country Club Rd.
Pullman, WA. 99163

5. TELEPHONE *(include area code)*
509-334-4404

FOR OFFICIAL USE ONLY

PVPO NUMBER
2004 00 053

6. FAX *(include area code)*
509-334-5320

FILING DATE
12/19/2003

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Small Corporation

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
Washington State

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Northwest Plant Breeding
2001 Country Club Rd.
Pullman, WA. 99163

1998

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 2705
$ 947
DATE 10/7/03

CERTIFICATION FEE:
$ 432.00
DATE 02/14/2005

11. TELEPHONE *(include area code)*
509-334-4404

12. FAX *(include area code)*
509-334-5320

13. E-MAIL
npb@completebbs.com

14. CROP KIND *(Common Name)*
Wheat

15. GENUS AND SPECIES NAME OF CROP
Triticum aestivum

16. FAMILY NAME *(Botanical)*
Gramineae

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☒ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

- a. ☒ Exhibit A. Origin and Breeding History of the Variety
- b. ☒ Exhibit B. Statement of Distinctness
- c. ☒ Exhibit C. Objective Description of Variety
- d. ☐ Exhibit D. Additional Description of the Variety *(Optional)*
- e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
- f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
- g. ☐ Filing and Examination Fee ($2,705), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(e) of the Plant Variety Protection Act)*
☒ YES *(If "yes", answer items 20 and 21 below)* ☐ NO *(If "no", go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? ☒ YES ☐ NO
IF YES, WHICH CLASSES? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, *etc.* [2] FOUNDATION [1] REGISTERED [1] CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☐ YES ☒ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☒ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER	SIGNATURE OF OWNER
Calvin Konzak	
NAME *(Please print or type)* Dr. Calvin Konzak	NAME *(Please print or type)*
CAPACITY OR TITLE President/CEO	DATE October 2 , 2003
CAPACITY OR TITLE	DATE

S&T-470 (07-01) designed by the Plant Variety Protection Office with WordPerfect 9.0. Replaces STD-470 (04-01) which is obsolete. *(See reverse for instructions and information collection burden statement)*

2004 00 053

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $2,705 ($320 filing fee and $2,385 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

ITEM

18a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

19. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

22. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

23. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

21. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

Only 1 certified seed generation will be permitted, except in an emergency due to failure of seed production from registered class seed stock.

22. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

Date of first sale of down graded breeder seed was September 2002.

23. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

Clearfirst is derived from Madsen, a publicly released variety.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center–East, Beltsville, MD 20705. Telephone: (301) 504-8089. http://www.ams.usda.gov/lsg/seed.htm

S&T-470 (07-01) designed by the Plant Variety Protection Office with WordPerfect 9.0. Replaces STD-470 (04-01) which is obsolete.

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Exhibit A. Origin and Breeding History of ClearFirst Soft White Winter Wheat.

ClearFirst was developed by the artificial induction of mutations for tolerance to imazamox herbicide, now BEYOND™,as a commercial name. ClearFirst is one among many wheat cultivars to be introduced into commercial production under the Trade Name Clearfield™ registered by BASF..

Origin: About 5lbs seed Madsen, a publicly released variety was mutagenized in 1995, and harvested in 1996. In 1997, a portion of the M2 generation was shared with American Cyanamid Co.(AmCy) representative, Bob Morrison, for screening with imazamox herbicide, which was carried out at the America Cyanamid Co. research site near Princeton, NJ. Twelve candidate herbicide tolerant mutants were recovered from field screening the M2 population of seed provided by NPB. The candidate mutants selected were then sent to NPB for vernalization. Rescreening the M3 generation from each of the progenies was done at AmCy Research headquarters, near Princeton, NJ, and selected tolerant plants were sent back to NPB for vernalization and grow out. Single plant progenies from the selected plants were sown in plots at Wilson Creek, WA, and at a site near Pasco, WA, in fall 1999 and winter 2000 (Pasco site). The plots were all sprayed across with 0, 1x, 2x, and 4x, x=5 gr.ai./ hectare imazamox, and after 3 weeks and again later, the plots were scored for tolerance to the herbicide. Those plots with highest tolerance were harvested, and in 2001, the selected sublines (M4 generation selected plant lines) from the original mutants were again subjected to field trail evaluations for tolerance. Tests were conducted at a site near Pullman, WA, and increases were made at Wilson Creek, WA. Sublines selected for continuation were all from mutants 1 and 2 among the twelve original candidates. In 2002, 20 sublines from among the 2 mutant progenies were all increased, in preparation for breeder seed production. In addition, field trials for herbicide tolerance and for yield were conducted with the collaboration of BASF, which had purchased the entire assets of American Cyanamid Co. in 2000. In 2002, a

subset of 12 sublines from among the 2 original mutants (which appeared to have been derived from the same mutational event) were selected for the formation of the ClearFirst Breeder seed stock. Some of the Breeder seed was downgraded for field trials by selected wheat growers in fall 2002, to provide demonstrations of the effectiveness of the BEYOND herbicide for controlling jointed goat grass and other grassy weed species of wheat. Part of the breeder seed stock was used for production of Registered seed in 2003, and a selected subset portion of each subline among the breeder seed lines (blended for the ClearFirst variety release) was harvested for use as new Breeder seed stock for production of Foundation seed in 2003, and spikes from each of the sublines among the group of sublines incorporated in the ClearFirst blend, were harvested for producing the next cycle of Breeder seed stock, beginning in 2003. The seed from the individual spike lines will be increased, ear to row, with rows harvested in 2004. The seed from the rows will represent Pre-Breeder seed stock, which will be sprayed with imazamox to assure purity for herbicide tolerance, and the seed harvested from the rows will be sown to plots the next fall, for Breeder seed production. The plots will be subjected to the same evaluations of tolerance required also of each generation of seed, and the Breeder seed plots harvested will initiate the next succession cycle of seed classes. Increases and reserves from each plot will be used for the next stock for each future cycle of seed production. A reserved portion of pre-breeder seed lots will assure continuation of the same sets of sublines currently in the blend. The same sequence for seed production will be followed over the next years, until the variety is replaced, or removed from production. The induced mutant tolerance gene present in ClearFirst has been sequenced and established as *Als*2, and has been patented by BASF.

ClearFirst was developed from two genetically equivalent artificial mutagenesis (EMS+Azide) – induced mutant selections from the publicly released variety Madsen. It is thus an 'essentially derived' variety, acceptable under current PVP Law for the US. Madsen was developed by USDA scientists at Washington

State University, and cooperatively released to the public in 1988 by the Washington, Idaho and Oregon Experiment Stations.

ClearFirst plants show the same range of variation for plant height, as is shown by the Madsen cultivar, but unlike Madsen, the chaff and awn color is a variable intensity tan, due to the effects of environment, whereas the chaff color of Madsen plants is a mixture of both white and tan colors. Because both mutant 1 and 2 of the ClearFirst variety components always had the tan chaff, and proved to have similar tolerances to imazamox, and have the same Als gene sequence, we assume that their original mutant origin was the same, even though in the M2 generation, we selected separate M2 herbicide tolerant plants to initiate the screening/evaluation sequences. Thus, ClearFirst differs from Madsen in two major distinctions: (1) tolerance to imazamox herbicide, Trade-name BEYOND™ and (2) uniform, but variable intensity tan chaff and awn color. Quality and other evaluations have indicated ClearFirst to be otherwise similar to Madsen. Madsen is the variety to which ClearFirst is most similar.

The mutant 1 and 2 sublines of which ClearFirst has been developed were stable for their distinctive properties throughout the selection history. These properties include the tolerance to imazamox herbicide, and the uniformly tan colored chaff characteristics. The chaff color is, however, responsive to environmental influences, as it develops late toward spike maturity, and is affected by the temperature during seed ripening. Thus the density of the chaff and awn color expression can vary from light to medium tan, never brown, or "red'. As noted above, the plant height of individual plants/or tillers on a plant can vary upwards to about 5" above others, but this variance seems to be a typical of the original variety, Madsen. The reason for this height variance is not understood, although the sublines from Mutant 1 have tended to show this variation somewhat more than those of sublines from Mutant 2, which have become parts of the ClearFirst blend. This range of variation has been commercially acceptable for the variety, Madsen, hence seems not to be a concern. Because no subline increased from

a selected single plant has shown uniformity for the taller height. It must be assumed that this feature is inherent to the genetics of the Madsen type SWW wheat. In fact, we noticed that single plant-derived sublines from a distinct Madsen crossbred derivative (ID8840501A), which have an overall shorter plant height, by as much as 25cm, have shown an equal or greater range of height variation compared to that present in ClearFirst.

Addendum to ClearFirst' Exhibit A:

The variety 'ClearFirst' is a uniform and stable variety and has been observed as such, for 10 years. Also, 'ClearFirst' is very much like the variety Madsen, from which it was derived. Variant plants and variations in the height of tillers of the same plant occur. These variants are about 4-6 inches taller in height, but have not proved reproducible as separate lines, thus the variants observed appear to be environmental response variations, and are not genetic variations, as was observed also for the variety 'Madsen'. My estimate is that the frequency of plant height variants in 'ClearFirst' is between 3 and 4 percent of the population.

EXHIBIT B. DISTICTNESS

ClearFirst is similar to 'Madsen', **the most closely related variety**, since it was derived via induced mutation from that publicly-released cultivar. ClearFirst is distinct from Madsen in two major ways: (1) ClearFirst is tolerant to the herbicide, imazamox, commercial name BEYOND™, while Madsen is highly susceptible, being killed completely within 2-3 weeks by a spray of 4 oz imazamox per acre, while ClearFirst will tolerate more than 12 oz of the chemical, per acre, without visible injury. ClearFirst carries an induced mutant allele, Als2, determined via gene sequencing by BASF, while Madsen carries the normal 'wild type' gene for the normal Als enzyme, which can be inhibited by the herbicide. Rights to the Als2 mutant allele of ClearFirst have been transferred to BASF, and are covered by US Patent No. **US10/486,596**, inventor, C. F. Konzak, and assigned to Northwest Plant Breeding Co. (2) ClearFirst has a variable intensity tan chaff and awns, the variable intensity being due to the effects of environment on color development during late spike maturity, while Madsen is made up of a mixture of plants with tan and white chaff colors, in an approximately 50:50 blend. The derived mutant cultivar is owned exclusively by Northwest Plant Breeding Company, 2001 country Club Rd., Pullman, WA99163.

Otherwise, we have noted no obvious differences between ClearFirst and Madsen, and because of its origin, we expect no other differences to have occurred. The variable tan chaff and awn color could be expected, because the two mutants from which ClearFirst was developed were single plant selections, evidently deriving their herbicide tolerance from the same mutational event, induced in a light tan chaff component among the Madsen cultivar, which was subjected to the mutagen treatment. The tan chaff trait is environmentally influenced, such that the intensity of spike coloration ranges from light to medium tan, even on the same plant. Chaff color is never the very dark tan or 'red'chaff of varieties with the 'red' chaff color, which may be less affected by environment.

The composition of ClearFirst is a blend of the higher yielding sublines, from Madsen mutants 1 and 2, which may have come from a single mutation event, since the tolerances and the loci mutated are essentially identical, including the DNA sequence changes registered by BASF and described in US Patent 10,_____-, in which the inventor is C. F. Konzak, with Northwest Plant Breeding Co, as assignee.

The differences between ClearFirst and Madsen have been observed over seven generations of testing and increase. The differences and similarities are stable and reproducible. The model for pure seed production involves an adherence to an herbicide Stewardship program, under which seed growers are required to apply the herbicide to each generation increase of the component sublines, which make up the variety. Farmers are required to sign contracts, which specify the herbicide application and timing of application of the BEYOND herbicide, as well as the frequency with which tolerant wheat can be grown on the same land. Farmers cannot buy the herbicide unless they have certified proof that they have purchased seed of a tolerant wheat variety.

EXHIBIT D. Additional Description of ClearFirst:

Milling and baking Data and analysis is provided on the attached pages. The data and analyses were provided by the USDA Western Wheat Quality Laboratory, Pullman, WA 99163.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(*Wheat*)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)
Calvin Konzak

ADDRESS (*Street and No. or RD No., City, State, and Zip Code*)
Northwest Plant Breeding
2001 Country Club Rd.
Pullman, WA 99163

FOR OFFICIAL USE ONLY

PVPO NUMBER 2004 00 053

VARIETY NAME ClearFirst

TEMPORARY OR EXPERIMENTAL DESIGNATION
NPBXM1, NPBXM2 Blend

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. [0][9][9] or [0][9]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used:
Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

[1] 1=Common 2=Durum 3=Club 4=Other (SPECIFY) : _____

2. VERNALIZATION:

[2] 1=Spring 2=Winter 3=Other (SPECIFY) : _____

3. COLEOPTILE ANTHOCYANIN:

[1] 1=Absent 2=Present

4. JUVENILE PLANT GROWTH:

[1] 1=Prostrate 2=Semi-erect 3=Erect

5. PLANT COLOR (boot stage):

[3] 1 = Yellow-Green 2 = Green 3 = Blue-Green

6. FLAG LEAF (boot stage):

[1] WAX 1 = absent 2 = present

[2] 1 = Erect 2 = Recurved [2] 1 = Not Twisted 2 = Twisted

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7. EAR EMERGENCE:

[0][2][0][3] Number of Days Earlier Than 02 - Eltan 03 - Luwjain *

[0][2][0][3] Number of Days Later Than 02 - Beamer 03 - Mohler *

8. ANTHER COLOR:

[1] 1 = Yellow 2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

[1][5] cm Taller Than Basin *

[1][5] cm Shorter Than Hubbard *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

A. ANTHOCYANIN

[1] 1= Absent 2=Present

B. WAXY BLOOM

[2] 1=Absent 2=Present

C. HAIRINESS (last internode of rachis)

[1] 1=Absent 2=Present

D. INTERNODE (SPECIFY NUMBER) = 4/

[1] 1= Hollow 2=Semi-solid 3=Solid

E. PEDUNCLE

[2] 1=Absent 2=Present

[30] t cm Length

[1] 1 = Erect 2 = recurved 3=semi-erect

F: Auricle: Antocyanin = Absent : Hair = absent

11. HEAD (at Maturity):

A. DENSITY

[1] 1=Lax 2=Middense 3= Dense

B. SHAPE

[2] 1 = Tapering 2= Strap 3 = Clavate 4 = Other (SPECIFY): _____

C. CURVATURE

[2] 1 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

[4] 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

[2] 1 = White 2 = Tan 3 = Other (SPECIFY) : _____

B. SHOULDER

[2] 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

[2] width 1=Narrow 2=medium 3=wide

C. BEAK

[3] 1 = Obtuse 2 = Acute 3 =Acuminate

[2] width 1=Narrow 2=medium 3=wide

D. LENGTH

[1-2] 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

mark 5-16-2005

12. GLUMES (at Maturity) *Continued*:

E. WIDTH

[2] 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm) 3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

[1] 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

[1] 1=Rounded 2=Angular

E. Color

[1] 1=White 2= Amber 3= Red 4= OTHER (Specify)

F. TEXTURE

[2] 1=Hard 2=Soft

C. BRUSH

[2] 1=Short 2=Medium 3=Long

[1] 1 = Not Collared 2 = Collared

D. CREASE

[1] 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

[1] 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

G. PHENOL REACTION *(see instructions)*:

[4] 1 = Ivory 2 = Fawn
3 = Light Brown 4 = Dark Brown
5 = Black

seed weight = 36 g/1000 seed

germ size = mid sized

MAH 5-16-2005

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[0]	Stem Rust *(Puccinia graminis* f. sp. *tritici)*	[0]	Leaf Rust *(Puccinia recondita* f. sp. *tritici)*
[0]	Stripe Rust *(Puccinia striiformis)*	[0]	Loose Smut *(Ustilago tritici)*
[0]	Tan Spot *(Pyrenophora tritici-repentis)*	[0]	Flag Smut *(Urocystis agropyri)*
[0]	Halo Spot *(Selenophoma donacis)*	[0]	Common Bunt *(Tilletia tritici* or *T. laevis)*
[0]	*Septoria nodorum* (Glume Blotch)	[0]	Dwarf Bunt *(Tilletia controversa)*
[0]	*Septoria avenae* (Speckled Leaf Disease)	[0]	Karnal Bunt *(Tilletia indica)*
[0]	*Septoria tritici* (Speckled Leaf Blotch)	[0]	Powdery Mildew *(Erysiphe graminis* f. sp. *tritici)*
[0]	Scab (*Fusarium* spp.)	[0]	"Snow Molds"

14. Disease *(Continued)* (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[0]	"Black Point" (Kernel Smudge)	[0]	Common Root Rot *(Fusarium, Cochliobolus* and *Bipolaris* spp.*)*
[0]	Barley Yellow Dwarf Virus (BYDV)	[0]	Rhizoctonia Root Rot *(Rhizoctonia solani)*
[0]	Soilborne Mosaic Virus (SBMV)	[0]	Black Chaff *(Xanthomonas campestris* pv. *translucens)*
[0]	Wheat Yellow (Spindle Streak) Mosaic Virus	[0]	Bacterial Leaf Blight *(Pseudomonas syringae* pv. *syringae)*
[0]	Wheat Streak Mosaic Virus (WSMV)	[0]	Other (SPECIFY)
[0]	Other (SPECIFY)	[0]	Other (SPECIFY)
[0]	Other (SPECIFY)	[0]	Other (SPECIFY)
[0]	Other (SPECIFY)	[0]	Other (SPECIFY)

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

[0]	Hessian Fly *(Mayetiola destructor)*	[0]	Other (SPECIFY)
[0]	Stem Sawfly *(Cephus* spp.)	[0]	Other (SPECIFY)
[0]	Cereal Leaf Beetle *(Oulema melanopa)*	[0]	Other (SPECIFY)
[0]	Russian Aphid *(Diuraphis noxia*	[0]	Other (SPECIFY)
[0]	Greenbug *(Schizaphis graminum)*	[0]	Other (SPECIFY)
[0]	Aphids	[0]	Other (SPECIFY)

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

Northwest Plant Breeding

From: Doug Engle [doug_engle@wsu.edu]
Sent: Wednesday, April 28, 2004 10:29 AM
To: northwestwheat@direcway.com
Cc: Craig Morris


WWQL TDIFF 7 Year.xls


WWQL TDIFF Mel-Coda Clearfield...

Cal,

I have attached two Excel files with data analysis we have done on Mel and Clearfirst. The wwql tdiff 7 year.xls file is the complete 7 year wrap up with everything bench marked to Stephens and Rely. Notice that the data comparison of Madsen and Coda to these are large so we have a lot of confidence in this comparison. Mel and Clearfirst have only been in the study one year. Clearfirst was in the trials for WA, OR and ID variety testing so we got a pretty good look at it (n=16). Since the data sets comparing Mel and Clearfirst to Coda and Madsen are so unbalanced I reran the analysis comparing them directly. This comparison is in the WWQL TDIFF Mel-Coda Clearfield-Madsen.xls file. The blocks in yellow are the direct comparison. The values in white are from the 7 year comparison bench marked to Rely (value 0 for all tests).

With the one year data it doesn't appear that either Mel or Clearfirst are significantly different than Coda or Madsen for quality.

Doug

~~As Compared to Stephens~~

T Difference Summary*
1997-2003 Crop Years

Soft White Winter Common

Variety	N	Years in Study	Test Weight	NIR Hardness	Wheat Protein	Single Kernel Hardness	Single Kernel Weight	Break Flour Yield	Flour Yield	Flour Ash	Milling Score	Flour Protein	Flour Swelling Volume	Flour RVA	Mixograph Absorption	Cookie Diameter
CLEARFIRST	16	1	3.48	4.05	4.45	11.94	7.15	1.29	-0.18	2.11	-1.21	4.04	-4.58	-13.62	2.09	-4.28
MADSEN	55	7	1.76	4.16	3.82	12.05	-18.09	5.71	1.09	3.91	-3.61	5.23	-2.92	-3.47	1.12	-5.96
Compared to Madsen 1 year data GLM re-run																
CLEARFIRST	16	1	3.35	1.16	1.55	5.36	-0.73	-2.04	-2.38	-1.69	0.09	1.21	0	-6.54	1.62	-0.82

REPRODUCE LOCALLY. Include form number and edition date on all reproductions. FORM APPROVED - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
~~Calvin Kontzak~~ Northwest Plant Breeding Company	NPBX M1 NPBX M2	ClearFirst
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
Northwest Plant Breeding 2001 Country Club Rd. Pullman, WA 99163		
	7. PVPO NUMBER 2004 00 053	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain [X] YES [ ]

9. Is the applicant (individual or company) a U.S. National or a U.S. based company? If no, give name of country [X] YES [ ] NO

10. Is the applicant the original owner? [X] YES [ ] NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

[X] YES [ ] NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

[X] YES [ ] NO If no, give name of country

11. Additional explanation on ownership *(if needed, use the reverse for extra space)*:

ClearFirst was developed via induced mutation technology from the publicly released Cultivar Madsen. Original stock of Madsen Cultivar, a public release (PI511673) was developed by the USDA-ARS and finally released by the USDA-ARS and experiment stations in Washington, Oregon and Idaho in January 1988. ,

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.